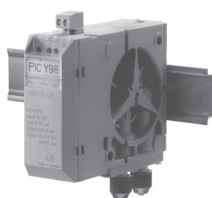


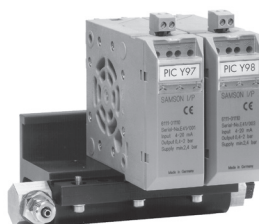
Electropneumatic Converters

Type 6111 i/p Converter

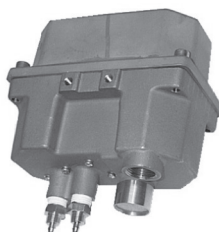
SAMSON



Type 6111 in standard version



Type 6111 mounted on a supply air manifold



Type 6111 in field enclosure

Mounting and Operating Instructions

EB 6111 EN

Edition April 2015

CE Ex
certified

Definition of signal words



DANGER!

Hazardous situations which, if not avoided, will result in death or serious injury



NOTICE

Property damage message or malfunction



WARNING!

Hazardous situations which, if not avoided, could result in death or serious injury



Note:

Additional information



Tip:

Recommended action

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1 General safety instructions

- The device must be mounted, started up or serviced by fully trained and qualified personnel only; the accepted industry codes and practices are to be observed. Make sure employees or third persons are not exposed to any danger.
- All safety instructions and warnings given in these mounting and operating instructions, particularly those concerning installation, start-up and maintenance, must be strictly observed.
- According to these mounting and operating instructions, trained personnel refers to individuals who are able to judge the work they are assigned to and recognize possible dangers due to their specialized training, their knowledge and experience as well as their knowledge of the applicable standards.
- The regulators comply with the requirements of the European Pressure Equipment Directive 2014/68/EU. Devices with a CE marking have a declaration of conformity, which includes information about the applied conformity assessment procedure. This declaration of conformity can be provided on request.
- To ensure appropriate use, only use the regulator in applications where the operating pressure and temperatures do not exceed the specifications used for sizing the regulator at the ordering stage.
- The manufacturer does not assume any responsibility for damage caused by external forces or any other external factors.
- Any hazards that could be caused in the valve by the process medium, operating pressure or by moving parts are to be prevented by taking appropriate precautions.
- Proper transport, storage, installation, operation and maintenance are assumed.

2 Description

2.1 Application

The device is used to convert a direct current input signal into a pneumatic output signal for measuring and control tasks.

It is particularly suitable as an intermediate element between electric measuring devices and pneumatic controllers or between electric control devices and pneumatic control valves.

The input is a load-independent direct current of 4 to 20 mA or 0 or 20 mA.

The output is a pneumatic signal of 0.2 to 1 bar or other signal ranges up to max. 8 bar.

2.2 Principle of operation

See Fig. 1 on page 7.

The devices consist of an i/p converter module and a downstream volume booster.

When operated, the supplied direct current i flows through the plunger coil (2) located in the field of a permanent magnet (3). At the balance beam (1), the force of the plunger coil, which is in proportion to the current, is balanced against the force of the dynamic backpressure p_K , which is produced on the flapper (6) by the air jet leaving the nozzle (7). The supply air (9) flows to the bottom chamber of the volume booster (8) and a certain amount of air determined by the diaphragm position flows past the sleeve (8.5) and leaves through the output (OUTPUT 36).

The output signal p_A is used also to supply the nozzle (7). The offset spring (8.2) ensures

that the output signal is at least 100 mbar even at an input signal of 0 mA. As the input current and the forces acting on the plunger coil increase, the flapper (6) moves closer to the nozzle (7).

This causes the backpressure p_K upstream of the restriction (8.4) increase until it corresponds with the input current.

The increasing backpressure pushes the diaphragm (8.3) and the plug sleeve (8.5) downwards. As a result, the supply air causes the output pressure p_A to increase until a new state of equilibrium is reached in the diaphragm chambers.

When the backpressure p_K drops, the diaphragm moves upwards, releasing the plug sleeve. The output pressure p_A can escape through the sleeve until the forces are equal again.

Volume booster

See Fig. 1 on page 7.

Booster	I (top diagram)	II (bottom diagram)
Output signal	0.1 bar or higher	0.0 bar or higher
i/p converter module	Type 6109 or Type 6112	Type 6112 only



Note:

A relatively stable supply air network is required for the version with volume booster II.

Sample applications

– **Booster I**

It can be used in all applications allowing a zero point of min. 0.1 bar. Jumps in the supply air network can be compensated for, without affecting the output signal.

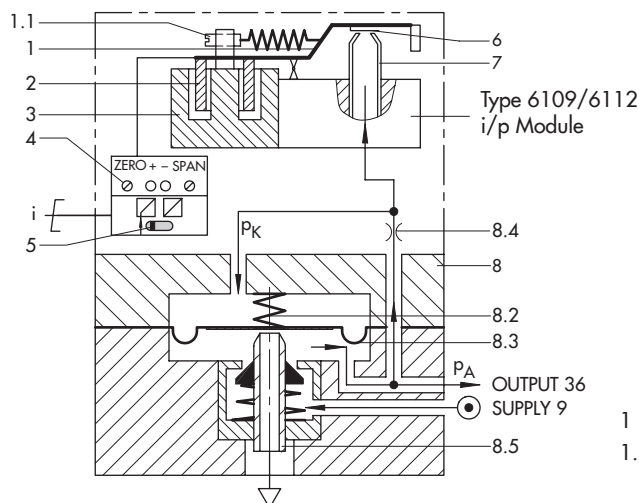
For example, to control pneumatic control valves.

– **Booster II**

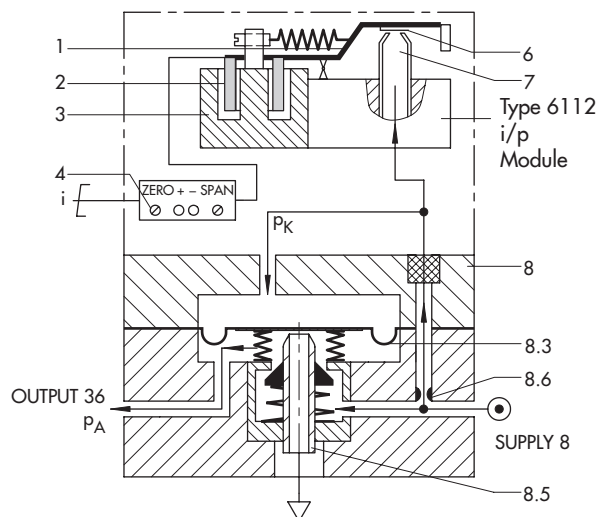
It can be used in applications requiring a zero point of 0 bar. For example, to control pneumatic cylinders or rollers used in the paper industry.

2.3 Versions

See section 12 on page 23.



Version with volume booster I



Version with volume booster II

Fig. 1: Functional diagram

- 1 Balance beam
- 1.1 Mechanical zero point adjuster (0 to 20 mA version only)
- 2 Plunger coil
- 3 Permanent magnet
- 4 Zero point and span adjusters (not in 0 to 20 mA version)
- 5 Slide switch for switch-off electronics (not in 0 to 20 mA version)
- 6 Flapper
- 7 Nozzle
- 8 Volume booster
- 8.2 Offset spring
- 8.3 Diaphragm
- 8.4 Restriction
- 8.5 Plug sleeve (venting)
- 8.6 Fixed restriction
- 9 Springs
- p_A Output pressure
- p_K Backpressure (cascade pressure)
- Supply air

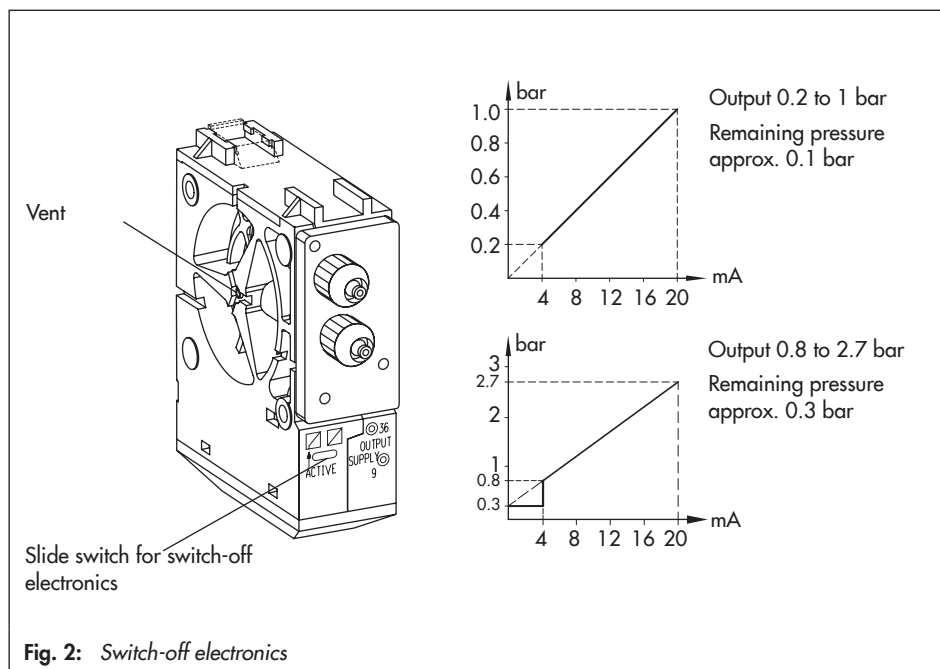
Switch-off electronics (see Fig. 2)

Devices with an input range from 4 to 20 mA have a slide switch which activates the switch-off electronics. This function allows the input signal to be set to 0 mA when the signal falls below the switching point of $4.08 \pm \text{tolerance}$.

This causes the pneumatic output to be vented to approximately 100 mbar. This guarantees, for example, the tight shut-off function of a valve. This function requires a characteristic which passes through the zero point,

for example, at an output signal of 0.2 to 1 bar.

If the characteristic line does not pass through zero, for example, for an allocated output signal from 0.8 to 2.7 bar, then the pneumatic output is vented to a remaining pressure of approx. 0.3 bar when the switch-off electronics are activated.



3 Installation

3.1 Mounting position

Rail-mounting unit

Snap the device onto the top-hat rail (see Rail-mounting unit on page 19).

Optionally, mount it to a wall using the two $\varnothing 5.5$ mm holes.

The devices can also be mounted to a supply air manifold using the corresponding accessories (see section 11).

Field unit

Mount it using the bracket (1400-7432). See Field unit on page 20.

3.2 Electrical connection

For electrical installation, observe the relevant electrotechnical regulations and the accident prevention regulations that apply in the country of use. In Germany, these are the VDE regulations and the accident prevention regulations of the employers' liability insurance.

Adhere to the terminal assignment specified in the certificate. Switching the assignment of the electrical terminals may cause the explosion protection to become ineffective.

- ➔ Connect the wires for the input signal to the (+) and (–) terminals. The terminals are designed for wires with 0.2 to 2.5 mm² (see section 9). No additional voltage supply is required.

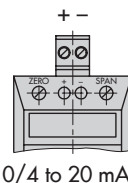


Fig. 3: Terminal connection · Input signal

3.2.1 Mounting and installation in hazardous areas

The following regulations apply:

EN 60079-14 (VDE 0165-1) Electrical Apparatus for Explosive Gas Atmospheres and EN 50281-1-2 (VDE 0165-2) Electrical Apparatus for Use in the Presence of Combustible Dust.

The maximum permissible values specified in the EC type examination certificates apply when interconnecting intrinsically safe electrical equipment (U_i or U_0 , I_i or I_0 , P_i or P_0 , C_i or C_0 and L_i or L_0).



WARNING!

Incorrect electrical connection will render the explosion protection unsafe.

Adhere to the terminal assignment specified in the certificate.

3.3 Pneumatic connection

Rail-mounting unit

The standard connections for supply air (SUPPLY 9) and output (OUTPUT 36) are designed as hose connections suitable for hose with 4 mm inside diameter and 6 mm outside diameter (see Rail-mounting unit on page 19).

The hose connection are also available with 1/8 NPT, G 1/8 or M5 female thread.

Field unit

See Field unit on page 20. The pneumatic connections (supply air and output) are designed as a bore with 1/4-18 NPT thread.

Supply air (see section 9)

- Min. + 0.4 bar above the upper signal pressure range value
- Max. 10 bar

Optional for rail-mounting unit:

- Supply over manifold (see section 7).

4 Operation

See Fig. 5 on page 19.

4.1 Checking zero and span

The device converts the input signal proportionally into the output signal.

The signal ranges are specified on the nameplate. The specified range is fixed and can only be changed by approx. 10 % using the potentiometers.

If the device does not work properly for any reason, check the zero and span.

The **ZERO** and **SPAN** potentiometers are accessible through the holes in the front cover after opening the clear plastic cover (see Fig. 1 and section 10).



Note:

The zero point of devices with booster I cannot be adjusted lower than 0.1 bar.

Do not adjust the characteristic in devices with booster II at all as the setting is much more complicated than in the version with booster I.

4.1.1 Zero

1. Connect a pressure gauge (minimum accuracy class 1) to the converter output.
2. Set the supply air to 0.4 bar above the upper output signal range value and apply it to the device.
3. Deactivate the switch-off electronics at the slide switch (5) (push the switch accessible through the oblong hole at the bottom of the converter away the ACTIVE arrow).
4. Set the input signal to the lower range value using a suitable ammeter (e.g. set it to 4 mA for 4 to 20 mA range = 0.2 to 1 bar).

The output signal of the pressure gauge should now indicate 0.2 bar.

If this is not the case, readjust the zero point accordingly with the ZERO potentiometer.

2. If this is not the case, readjust the span accordingly with the SPAN potentiometer.
3. Change the input signal abruptly from 20 to 0 mA and check whether the output signal assumes the upper range value of 1.0 bar.

As the adjustment of zero and span influence each other, recheck both values and correct them, if necessary.

4.2 Zero adjustment for versions with an input signal of 0 to 20 mA

These versions do not have potentiometers to adjust zero or span nor switch-off electronics. The zero point can only be adjusted mechanically at the zero screw (1.1).

To proceed, remove the front cover and insert a screwdriver through the hole in the cover of the Type 6112 i/p Module (see Fig. 1 and section 10).

4.1.2 Span

1. Set the input signal to 20 mA (upper range value) using a suitable ammeter. For example, the output signal at the pressure gauge should now indicate 1.0 bar for a 4 to 20 mA range = 0.2 to 1.0 bar.

5 Maintenance

No specific maintenance measures need to be carried out. To guarantee trouble-free operation of the converter, make sure that the supply air is always clean (see section 9 for air quality).

Therefore, check the air filter and separator installed in the upstream air reducing station regularly.

6 Servicing explosion-protected devices

If a part of the device on which the explosion protection is based needs to be serviced, the device must not be put back into operation until a qualified inspector has assessed it according to explosion protection requirements, has issued an inspection certificate or given the device a mark of conformity.

Inspection by a qualified inspector is not required if SAMSON performs a routine test on the device before putting it back into operation. Document the passing of the routine test by attaching a mark of conformity to the device.

Replace explosion-protected components only with original, routine-tested components from the manufacturer.

Devices that have already been used outside hazardous areas and are intended for future use inside hazardous areas must comply with the safety requirements placed on serviced devices. Before being operated inside hazardous areas, test the devices according to the specifications for servicing explosion-protected devices.

7 Supply air manifold for rail-mounting unit

See Fig. 4 on page 14.

Supply air manifolds and the corresponding accessories are listed in section 11.

The manifold (Fig. 4) is available as an accessory and provides a common air supply for several Type 6111 i/p Converters.

The manifold can be made to be as long as required by combining two or more connecting rails of the manifolds for 3, 4, 5 and 6 converters. Individual connecting rails are connected by a coupling (5, order no. 1400-7294) with seals (4).

Optionally, the manifold can be fitted with a shut-off valve, pressure gauge as well as hose connections (screw or push-on fittings) for the output signals.

7.1 Mounting the supply air manifold

To fix the manifold to a wall or to a panel in a control cabinet, drill holes for M5 screws in the groove of the connecting rail.

Make sure you keep 18 mm distance between the holes and the left and right edge of the rail to allow you to mount the i/p converters properly.

7.2 Preparing the supply air manifold

7.2.1 Connectors

Mount connectors (3 and 4) at the ends of the manifold rail and secure them in place with the grub screws (6).

Supply air

Connect the supply air either over the connector (3) or over a hose screw fitting or push-on fitting (10a or 10b).

Firmly screw the hose screw fitting (10a) or push-on fitting (10b) with its seal (10.1) into one of the two connectors (3). If the accessories include a shut-off valve (11), mount it between the connector and supply air port screw fitting.

End connection

Screw screw plug (2) into the connector using sealing tape.

If a pressure gauge (1) is fitted, seal it in place of the screw plug.

Insert seals (4) on both connectors and push them on the left or right side into the connecting rail.

Align connectors and secure them in place with the grub screws (6).

- | | | | | | |
|-----------------|--|------|--------------------------------------|------------------|--|
| 1 | Pressure gauge | 10 | Connection for supply air
(G 1/4) | 12 ¹⁾ | M3x6 screw with seal |
| 2 | Screw plugs | a: | Hose screw connection | 15 | Connecting plate (hose connection) |
| 3 ¹⁾ | Connector G 1/4 | b: | Hose push-on connection | 16 ¹⁾ | Connecting plate
(supply air manifold)
with 3x10 mm screws |
| 4 ¹⁾ | Seals | 10.1 | Seal | | |
| 5 | Coupling | 11 | Shut-off valve | | |
| 6 ¹⁾ | M4x6 grub screw | 11.1 | Seal | | |
| 7 | Connection for output signal
a: Hose screw connection
b: Hose push-on connection | | | | |
| 7.1 | Washer | | | | |
| 8 ¹⁾ | Cap screw M4x16 | | | | |
| 9 ¹⁾ | O-ring 3x2.7 mm | | | | |

¹⁾ Included in the scope of delivery of the basic version

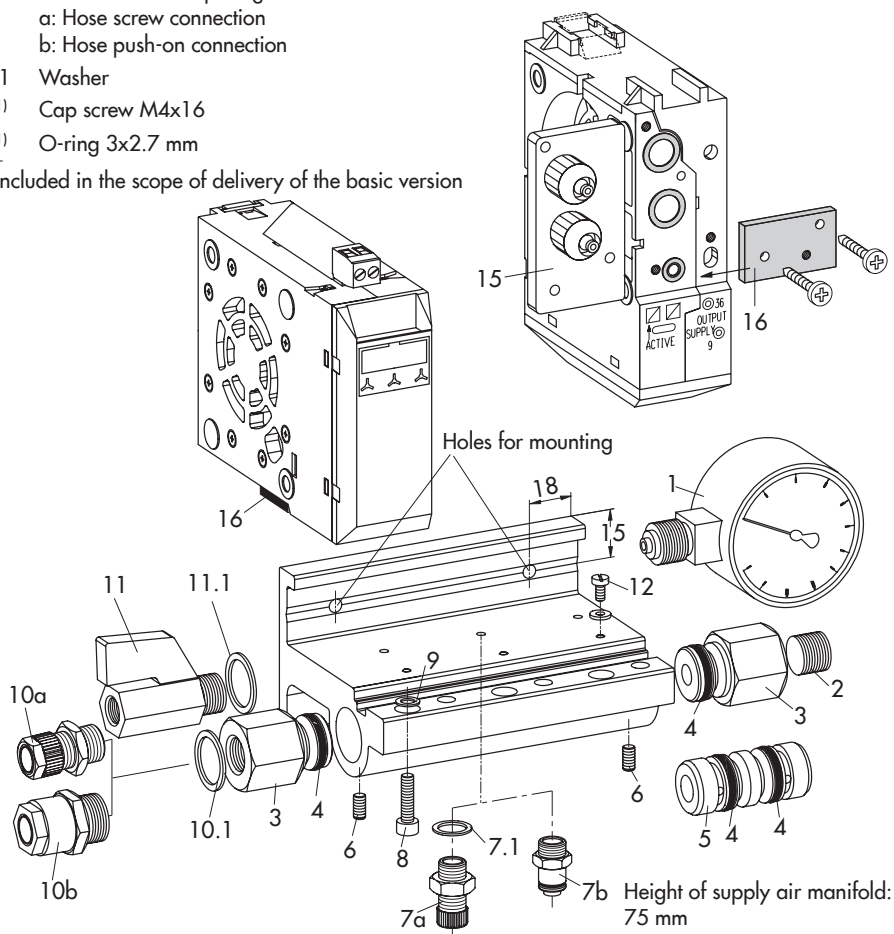


Fig. 4: Exchanging the connecting plate in the converter (top) · Assembling the supply air manifold (below)

7.2.2 Fittings for pneumatic output signals

Attach the output signal connection (7a or 7b) to the holes on the bottom of the connecting rail (G 1/8 thread).

Fasten the hose screw fitting connection (7a) together with a washer (7.1).

The hose push-on fitting connection (7b) has an integrated seal and is fastened without the washer (7.1).

7.2.3 Connecting supply air manifolds

A coupling (5) with seals (4) is used to connect the individual connecting rails together:

- Place seals (4) on the outer grooves of the coupling (5).
- Press the coupling into the manifold hole and push on the connecting rail as far as it will go.
- Screw in grub screws (6) to fasten the parts together.

7.3 Mounting the Type 6111 Converter on the manifold

- Attach fastening screws for Type 6111: Insert cap screws (8) from below into the holes in the connecting rail and push on O-rings (9) from the top to prevent the screws from falling out.
- Unscrew the original connecting plate (15) from the bottom of the converter and replace it with the black connecting

plate (16) using the two 3x10 mm screws included in the accessories (Fig. 4, top).

- Slightly tilt the converter upwards and place it on the manifold already mounted (7.1). Press the converter down and secure it with the fastening screw (8).



Note:

If fewer Type 6111 Converters are mounted on the manifold than it is intended for, seal any unused holes in the supply air duct with the M3x6 cap screws (12) and seals included in the accessories.

Qty. Type 6111	Combination with coupling Units per manifold rail				Manifold rail ¹⁾ length [mm] Height: 75 mm
	3	4	5	6	
3	1	–	–	–	108
4	–	1	–	–	144
5	–	–	1	–	180
6	–	–	–	1	216
7	1	1	–	–	252
8	–	2	–	–	288
9	–	1	1	–	324
10	–	–	2	–	360
11	–	–	1	1	369
12	–	–	–	2	432
13	1	–	2	–	468
14	–	1	2	–	504
15	–	–	3	–	540

¹⁾ Plus length of accessories

8 Troubleshooting

Problem	Possible reasons	Corrective action to be taken	Comments
No output signal despite changing the input signal	Supply air not connected	Check supply air connection. See section 3.3.	
	Incorrect terminal assignment	Connect + and – terminals correctly. See section 3.2.	NOTICE i/p converter does not need any extra voltage! Do not connect 24 V DC!
	Incorrect input signal	Connect correct signal.	Read nameplate: 0 to 20 mA or 4 to 20 mA.
i/p converter constantly vents off air loudly	Connections for supply air and output at the i/p converter mixed up	Check pneumatic connections. See section 3.3.	
i/p converter does not reach 100 % output e.g. 20 mA input: Output only 70 % instead of 100 %	Supply pressure too low.	Supply air must be 0.4 bar higher than the max. output signal (supply air = 0.4 bar)	Read nameplate: Output 0.2 to 1 bar → Supply air at least 1.4 bar
	Input signal faulty	Check whether the input signal at the terminals reaches 100 % (100 % is e.g. 20 mA in standard version and 12 mA for split-range operation)	NOTICE i/p converter has a load of: – max. 6 V (standard version) – max. 7 V (Ex ia version) Check specification concerning permissible load at the source of the input signal.

9 Technical data

Type 6111		Rail-mounting unit	Field unit
Explosion protection		II 2 G Ex ia IIC T6	II 3 G Ex nA IIC T6
Input		4 to 20 mA (0 to 20 mA on request), for split-range: 4 to 12 mA or 12 to 20 mA, other signals on request	
Load	Standard	$\leq 6\text{ V}$ (corresponding to $300\ \Omega$ at 20 mA)	
	Explosion-protected version without switch-off electronics	7 V (corresponding to $350\ \Omega$ at 20 mA) $\leq 4\text{ V}$ (corresponding to $200\ \Omega$ at 20 mA)	
with Type 6112 i/p Module		0.2 to 1 bar (3 to 15 psi) (standard range) 0.4 to 2 bar (6 to 30 psi) (standard range) Special ranges adjustable at the factory to meet customer specifications	
Output	Module A	Initial value ²⁾ 0.1 to 0.4 bar	Span Δp 0.75 to 1.0 bar
	Module B	0.1 to 0.4 bar	1.0 to 1.35 bar
	Module C	0.1 to 0.4 bar	1.35 to 1.81 bar
	Module D	0.1 to 0.8 bar	1.81 to 2.44 bar
	Module E	0.1 to 0.8 bar	2.44 to 3.28 bar
	Module F	0.1 to 0.8 bar	3.28 to 4.42 bar
	Module G	0.1 to 1.2 bar	4.42 to 5.94 bar
	Module H	0.1 to 1.2 bar	5.94 to 8.0 bar ¹⁾
Max. air output capacity ³⁾		2.0 m ³ /h at an output of 0.6 bar (0.2 to 1.0 bar) 2.5 m ³ /h at an output of 1.2 bar (0.4 to 2.0 bar) 8.5 m ³ /h at an output of 5.0 bar (0.1 to 8.0 bar)	
Supply air		At least 0.4 bar above the upper signal pressure range value, max. 10 bar without supply pressure regulator	
Air quality acc. to ISO 8573-1: 2001		Max. particle size and density: Class 4 · Oil content: Class 3 · Pressure dew point: Class 3 or at least 10 K below the lowest ambient temperature to be expected	
Power consumption		0.08 m ³ /h at 1.4 bar · 0.1 m ³ /h at 2.4 bar · Max. 0.26 m ³ /h at 10 bar	
Characteristic		Characteristic: Output linear to input	
Hysteresis		$\leq 0.3\%$ of final value	
Deviation from terminal-based conformity		$\leq 1\%$ of upper range value (for upper range values up to 5 bar); more exact values on request $\leq 1.5\%$ of upper range value (for upper range values above 5 bar)	
Effect in % of the upper range value		Supply air: $<0.1\%$ /0.1 bar Alternating load, supply air failure, interruption of the input current: $<0.3\%$ Ambient temperature: lower range value $<0.03\%/K$, span $<0.03\%/K$	
Dynamic response		At an output of 0.2 to 1 bar	
Limiting frequency		5.3 Hz	
Phase shift		-130°	
Variable position		Max. 3.5 % depending on mounting position: e.g. $\pm 1\%$ when mounted horizontally	

¹⁾ Initial value raised up to 3.0 bar (special version)

²⁾ The max. possible output pressure is 8 bar.

³⁾ Measured with 2 m hose with 4 mm inside diameter.

Technical data (continued)

Ambient conditions, degree of protection, weight		
Storage temperature	-40 to 70 °C	
Ambient temperature	-20 to 70 °C	
Degree of protection	IP 20	IP 65
Weight, approx.	0.35 kg	1.9 kg
Materials		
Housing	Glass-fiber-reinforced polyamide	Stainless steel 1.4581

10 Dimensions

– Rail-mounting unit

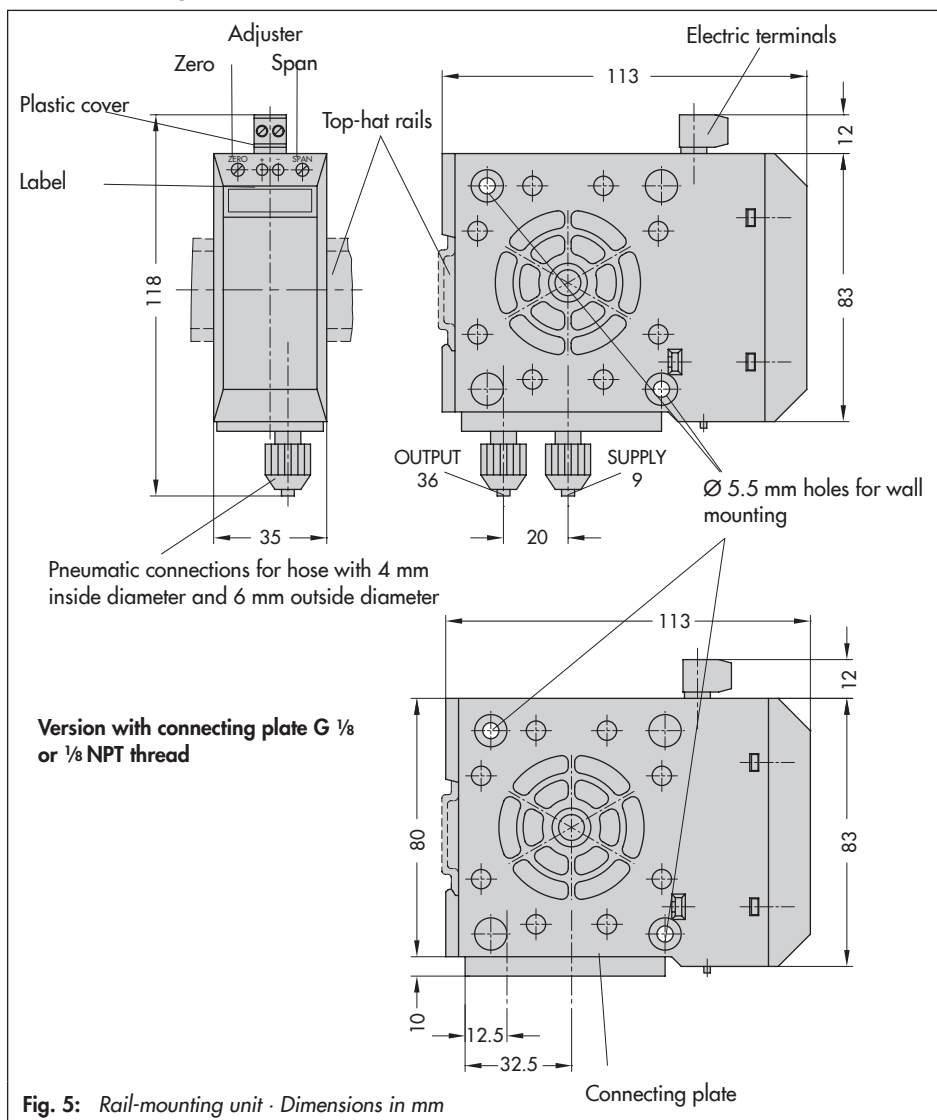


Fig. 5: Rail-mounting unit · Dimensions in mm

– Field unit

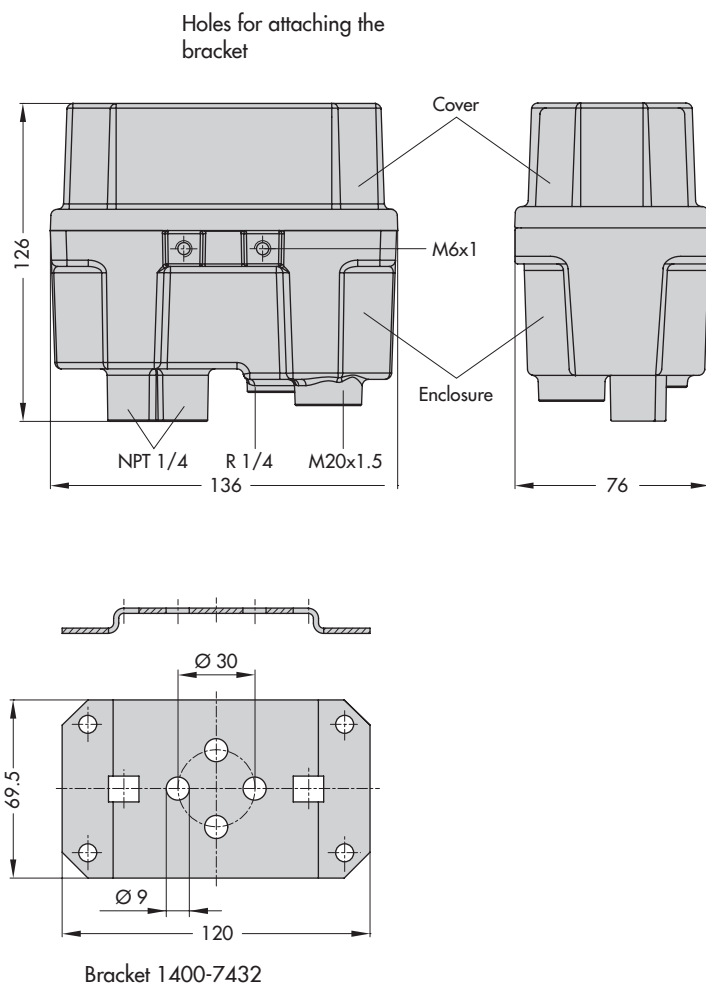


Fig. 6: Field unit · Dimensions in mm

11 Accessories

Item number in parentheses (x). See Fig. 4 on page 14.

Accessories/spare parts · Connecting plate or adapter plate	Order no.
Connecting plate with hose connection (without coupling nut) (15)	0360-2950
M10x1 coupling nut for hose connection (15)	0250-1831
Connecting plate 1/8 NPT (15)	0360-3251
Connecting plate G 1/8 (15)	0360-3250
Adapter plate for supply air manifold (16)	0360-3096
3x12 mm screw for connecting plate with hose connection	8336-0728
3x16 mm screw for connecting plate (NPT and G)	8336-0730
3x10 mm screw for adapter plate for supply air manifold	8336-0727
Male screw fitting G 1/8 on hose with 4 mm inside diameter and 6 mm outside diameter, brass	8582-1450
Male screw fitting 1/4 NPT on hose, 4 mm inside diameter and 6 mm outside diameter, brass	8582-1523

Accessories for field unit	Order no.
Mounting bracket (stainless steel) including two M6x12 hexagon head screws and washers to mount the field unit to the bracket	1400-7432

Supply air manifold for converter units	3	4	5	6
	Order no.			
Supply air manifold (basic version) including two G 1/4 connectors	1400-...			
With one screw plug	7266	7273	7280	7287
With pressure gauge (0 to 6 bar)	7269	7276	7283	7290
With pressure gauge (0 to 6 bar) and shut-off valve	7270	7277	7284	7291

Supply air manifold with hose screw fittings for outputs (hose with 4 mm inside diameter and 6 mm outside diameter) and supply air (hose with 8 mm inside diameter and 10 mm outside diameter)	1400-...			
With one screw plug	7267	7274	7281	7288
With pressure gauge (0 to 6 bar) and shut-off valve	7271	7278	7285	7292
Supply air manifold with hose screw fittings for outputs (hose with 4 mm inside diameter and 6 mm outside diameter) and supply air (hose with 8 mm inside diameter and 10 mm outside diameter)	1400-...			
With one screw plug	7268	7275	7282	7289
With pressure gauge (0 to 6 bar) and shut-off valve	7272	7279	7286	7293
Coupling (5) to connect supply air manifolds including two NBR seals (4)	1400-7294			

Item number in parentheses (x). See Fig. 4.

Accessories/spare parts · Supply air manifold	Thread	Connection for hose D/d	Length [mm] mounted	Order no.
Pressure gauge, 0 to 6 bar (1)	G ¼ A	–	27	8520-0019
Shut-off valve (11)	G ¼		30	8502-0044
Connector (3)	G ¼		20	–
Connector G ¼ (3)				0230-2581
Seal for connector (14x2.5 mm), NBR (4)				8421-0347
Hose screw fitting, output (7a)	G ⅜ A	D/d = 6/4	19	8582-1450
Hose push-on fitting, output (7b)	G ⅜ A	D/d = 6/4	13	8582-1563
Washer (7.1)				8414-0136
Hose screw fitting, supply air (10a)	G ¼ A	D/d = 10/8	21	8582-1735
Seal (10.1), hose connection				8414-0140
Hose push-on fitting, supply air (10b)	G ¼ A	D/d = 10/8	23	8582-1564
Connecting plate, standard (15)	D 6 hose Attached to supply air manifold			0360-2950
Connecting plate, supply air manifold (16)				0360-3096
Screw plug (2)				8323-0005
M4x6 grub screw (6)				8324-0605
M4x6 cap screw (8)				8333-0495
3x2.7 mm O-ring, NBR (9)				8421-0235

D = Outside diameter

d = Inside diameter

12 Article code

Order no. Type 6111-		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Explosion protection	Without	0																	
	⊕ II 2G Ex ia IIC T6 acc. to ATEX	1																	
	⊕ II 3G Ex nA II T6 acc. to ATEX ⁴⁾	8																	
Housing	For rail mounting, 35 mm top-hat rail (DIN EN 60715)	0																	
	Field housing in stainless steel 1.4581	1																	
i/p module	Type 6109		1																
	Type 6112		2																
Input	4 to 20 mA with switch-off electronics			0	1														
	0 to 20 mA without switch-off electronics ¹⁾		2	0	2														
	4 to 12 mA with switch-off electronics		2	0	3														
	12 to 20 mA with switch-off electronics		2	0	4														
Volume booster	I (output from 0.1 bar/3 psi)					1													
	II (output from 0 bar/0 psi) ²⁾		2			2													
Output	0.2 to 1.0 bar					1	0	1											
	3 to 15 psi					1	0	2											
	0.4 to 2.0 bar		2			1	0	3											
	6 to 30 psi		2			1	0	4											
Special ranges ³⁾	Initial value ⁵⁾																		
	Span Δp																		
	0.1 to 0.4 bar					2			1	1									
	0.1 to 0.4 bar					2			1	2									
	0.1 to 0.4 bar					2			1	3									
	0.1 to 0.8 bar					2			1	4									
	0.1 to 0.8 bar					2			1	5									
	0.1 to 0.8 bar					2			1	6									
	0.1 to 1.2 bar					2			1	7									
	0.1 to 1.2 bar					2			1	8									
Operating direction	Increasing/increasing										1								
	Increasing/decreasing		2								2								
Pneumatic connection	For hose with 4 mm inside and 6 mm outside diameter (screwed hose M10 x 1)	0										0							
	1/8-27 NPT female thread	0										1							
	ISO-228/G 1/8 female thread	0										2							
	M5 female thread	0										3							
	1/4-18 NPT	1										4							
Electrical connection	For 0.5 to 2.5 mm ² terminals	0											1						
	Angle connector (DIN EN 175301-803)	0											2						
	M20 x 1.5	1											3						
Degree of protection	IP 20	0													1				
	IP 65	1													2				
Temperature	T _{min} ≥ -20 °C															0			
Spec. version	Without																0	0	0

¹⁾ Without switch-off electronics and without potentiometer for zero point and span correction

²⁾ A relatively stable supply air network is required for the version with volume booster II

³⁾ Specify setting range, e.g. set to 0.1 to 4 bar; output pressure max. 8 bar, supply air 10 bar

⁴⁾ For Ex nA version: rail-mounting unit in an enclosure with min. IP 54 (see statement of conformity, p. 26)

⁵⁾ Initial value raised up to 3.0 bar (special version 300 and 301)



(12) The marking of the equipment shall include the following:



Zertifizierungsstelle Explosionsschutz
By order Braunschweig, 26 November 2001

(Signature) (Seal)

Dr. Ing. U. Johannsmeyer
Regierungsdirktor



TRANSLATION

EC TYPE EXAMINATION CERTIFICATE

(1) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres – **Directive 94/9/EC**

(2) EC Type Examination Certificate Number

PTB 01 ATEX 2174

(3) Equipment: Model 6111-1 i/p Converter
(4) Manufacturer: SAMSON AG Mess- und Regeltechnik
(5) Address: Welsmüllerstr. 3, 60314 Frankfurt am Main, Germany

(6) The equipment and any acceptable variations thereof are specified in the schedule to this certificate.

(7) The Physikalisch-Technische Bundesanstalt, notified body number 0102 according to Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the essential health and safety requirements of the Directive and that the construction of equivalent protective systems intended for use in potentially explosive atmospheres specified in Annex II to the Directive.

The examination and test results are recorded in confidential report.

PTB Ex 01-21297

(8) The essential health and safety requirements are satisfied by compliance with

EN 50021: 1997 + A1 + A2 EN 50020: 1994

(9) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use as specified in the schedule to this certificate.

(10) According to the Directive 94/9/EC, this EC Type Examination Certificate relates only to the design and construction of the specified equipment. If applicable, other requirements of this Directive apply to the Manufacture and supply of this equipment.

Statements of Conformity without signature and seal are invalid. This Statement of Conformity may be reproduced only in its entirety without any changes.
Extracts or changes shall require the prior approval of the Physikalisch-Technische Bundesanstalt.
Physikalisch-Technische Bundesanstalt Bundesallee 100 D-38116 Braunschweig

PtB 14.doc

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Physikalisch-Technische Bundesanstalt Bundesallee 100 D-38116 Braunschweig

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(13)

Schedule

(14)

EC TYPE EXAMINATION CERTIFICATE No. PTB 01 ATEX 2174

(15)

Description of Equipment

The model 6111-1.../p-Converter is composed of an i/p module and a downstream pneumatic converter and serves for converting a load-independent current of 1 to 5 mA or 0/4 to 20 mA respectively into a standard pressure signal of 0.2 to 1 bar or 0.4 to 2 bar respectively.

The Model 6111-1.../p Converter is a passive two-terminal network which may be connected to any certified intrinsically safe circuit, provided the permissible maximum values of U_L , I_L and P_L are not exceeded.

The correlation between temperature classification, permissible ambient temperature ranges and maximum short-circuit currents is shown in the table below:

Temperature class	Permissible ambient temperature range	Maximum short-circuit current
T6	-45 °C ... 60 °C	85 mA or
T5	-45 °C ... 70 °C	100 mA or
T4	-45 °C ... 80 °C	120 mA

Electrical data

Signal circuit
(terminals 11/12)
Type of protection: Intrinsic safety EEx ia IIC
only for connection to a certified intrinsically safe circuit

Maximum values

U_L = 28 V
 I_L = 100 mA or 85 mA
 P_L = 0,7 W

or

U_L = 25 V
 I_L = 120 mA
 P_L = 0,7 W

Q_L = negligible, L_L = negligible

(16) Test report PTB Ex 01-21297

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Physikalisch-Technische Bundesanstalt Bundesallee 100 D-38116 Braunschweig

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(17) Special conditions for safe use

None

(18) Special health and safety requirements

In compliance with the standards specified above.

Zertifizierungsstelle Explosionsschutz
By order

Braunschweig, 26 November 2001

(Signature) (seal)

Dr. Ing. U. Johannsmeyer
Regierungsdirektor

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Physikalisch-Technische Bundesanstalt Bundesallee 100 D-38116 Braunschweig

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TRANSLATION

Statement of Conformity

(1) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres –
Directive 94/9/EC

(2) EC Type Examination Certificate Number

PTB 02 ATEX 2013 X

(3) Equipment: Model 6111-8... i/p-Converter

(4) Manufacturer: SAMSON AG Mess- und Regeltechnik

(5) Address: Weismüllenteich 3, 60314 Frankfurt am Main, Germany

(6) The equipment and any acceptable variation thereof are specified in the schedule to this certificate and the documents referred to therein.

(7) The Physikalisch-Technische Bundesanstalt, notified body number 0102 according to Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the essential health and safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres specified in Annex II to the Directive.

The examination and test results are recorded in confidential report.

PTB Ex 02-21420

(8) The essential health and safety requirements are satisfied by compliance with

EN 50021: 1999

(9) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use as specified in the schedule to this certificate.

(10) In compliance with the Directive 94/9/EC this Statement of Conformity relates only to the design and construction of the equipment specified. Further requirements of this Directive apply to manufacture and marketing of this equipment.

(12) The marking of the equipment shall include the following:



Zertifizierungsstelle Explosionschutz
By order

Braunschweig.....

(Signature) (Seal)

Dr. Ing. U. Johannsmeyer
Regierungsdirektor

S c h e d u l e

Statement of Conformity PTB 02 ATEX 2013 X

Description of Equipment

The Model 6111-8.. /P-Converter is composed of an i/p module and a downstream pneumatic converter and serves to convert a load-independent current of 1 to 5mA or (0/4 to 20mA respectively into a standard pressure signal of 0.2 to 1bar or 0.4 to 2bar respectively.

The device is intended for use inside and outside of hazardous areas.

The correlation between temperature classification and permissible ambient temperature ranges is shown in the table below:

Temperature class	Permissible ambient temperature range
T6	60°C
T5	-45°C . . . 70°C
T4	80°C

Electrical data

Signal circuit
(terminals 11/12)

Type of protection: EEx nA II

Test report: PTB Ex 02-21420

Special conditions for safe use

1. The Model 6111-8.. /P-Converter shall be installed in an enclosure providing at least Degree of Protection IP 54 according to IEC Publication 60529; 1989.

The wiring shall be connected in such a manner that the connection facilities are not subjected to tensile and/or torsional stress.

Basic health and safety requirements

Are satisfied by compliance with the standard specified above.

Zertifizierungsstelle Explosionsschutz

Braunschweig,

By order
(Signature) (seal)
Dr. Ing. U. Johannsmeyer
Regierungsdirektor



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